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GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
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**Published:**

- with international search report
- before the expiration of the time limit for amending the  
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For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
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(54) Title: KETOCAMPHOLENIC ACID DERIVATIVES AND THEIR USE IN FRAGRANCE APPLICATIONS

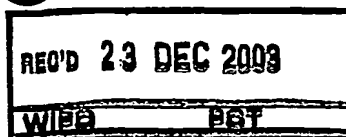
(57) Abstract: Ketocampholenic acid derivatives, their use, and methods of preparing these derivatives are described. In one aspect, novel derivatives of 2-oxo-4,5,5-trimethylcyclopent-3-enylacetic acid (herein further referred as ketocampholenic acid or KCA), which is a natural product that may be prepared by microbial biological oxidation of camphor or of a suitable precursor, are described. Novel derivative compounds may be prepared according to the methods described in the present invention. Such derivative olfactory properties that make them useful in fragrance and flavor applications.

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# INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)



Applicant's or agent's file reference <b>16219-004WO1</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, Item 5 below.	
International application No. <b>PCT/US 03/ 23130</b>	International filing date (day/month/year) <b>24/07/2003</b>	(Earliest) Priority Date (day/month/year) <b>02/08/2002</b>
Applicant  <b>AROMAGEN CORPORATION</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☒ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**KETOCAMPHOLENIC ACID DERIVATIVES AND THEIR USE IN FRAGRANCE APPLICATIONS**

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 23130

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07C69/738 C07C69/716 C07C69/675 C07C69/732 C07C69/608  
C07D307/93 C07D311/00 C07D321/10 C12P7/62 C12P7/40  
C11B9/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C07D C12P C11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, BEILSTEIN Data, CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	D. DE RIJKE ET AL.: "New compounds with small rings in essential oils" PERFUMER AND FLAVORIST, vol. 7, no. 1, 1982, pages 31-7, XP008025274 WHEATON, IL, US pages 33, table, compound XXIV pages 36, table II, compound XXIV	1-3
X	E. E. BLAISE ET AL.: "Migration du groupe méthyle dans la molécule du camphre" BULLETIN DE LA SOCIETE CHIMIQUE DE FRANCE., vol. 27, 1902, pages 71-76, XP008025229 SOCIETE FRANCAISE DE CHIMIE. PARIS., FR ISSN: 0037-8968 page 75, last three paragraphs	1-3

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

5 December 2003

Date of mailing of the international search report

19/12/2003

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 23130

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	J. CASON ET AL.: "Mass Spectra of Certain Cycloalkylacetates" JOURNAL OF ORGANIC CHEMISTRY., vol. 32, 1967, pages 575-581, XP002263610 AMERICAN CHEMICAL SOCIETY. EASTON., US ISSN: 0022-3263 page 581, preparation of (24) ---	1-3
X	YASUHIKO ASAHINA ET AL.: "Über die Oxydation von Bornylacetat" CHEMISCHE BERICHTE., vol. 69, 1936, pages 349-354, XP008025227 VERLAG CHEMIE GMBH. WEINHEIM., DE ISSN: 0009-2940 page 352, Katalytische Hydrierung der Oxo-campholensäure ---	1-3
X	H. E. CONRAD, E. J. COREY ET AL.: "LACTONE INTERMEDIATES IN THE MICROBIAL OXIDATION OF (+)-CAMPHOR" TETRAHEDRON LETTERS., no. 10, 1965, pages 561-565, XP002263611 ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM., NL ISSN: 0040-4039 page 563 ---	4-6,8,10
A	US 5 688 673 A (ORIEL PATRICK J ET AL) 18 November 1997 (1997-11-18) the whole document -----	1-4

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☒ Claims Nos.: 4-6, 8, 10 (in part)  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 4-6, 8, 10 (in part)

Present claims 4-6, 8 and 10 relate to an extremely large number of possible methods and define the target compounds only by reference to a desirable characteristic or property, namely as "modified terpenoid compound having flavor- or fragrance-imparting capabilities" without any structural information. Support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the methods claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts relating to methods for making the compounds of claim 1.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 23130

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5688673	A	US 5487988 A	30-01-1996
		US 5652137 A	29-07-1997